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**Rimon et al.**

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(54) **HOVER AND TOUCH DETECTION FOR A DIGITIZER**

2203/04106 (2013.01); G06F 2203/04108 (2013.01); G06F 2203/04111 (2013.01)

(71) Applicant: **Microsoft Technology Licensing, LLC**,  
Redmond, WA (US)

(58) **Field of Classification Search**  
None  
See application file for complete search history.

(72) Inventors: **Ori Rimon**, Tel-Aviv (IL); **Ariel Kerner**, Herzlia (IL)

(56) **References Cited**

(73) Assignee: **Microsoft Technology Licensing, LLC**,  
Redmond, WA (US)

U.S. PATENT DOCUMENTS

4,686,332 A 8/1987 Greanias et al.  
4,707,845 A 11/1987 Krein et al.

(Continued)

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

FOREIGN PATENT DOCUMENTS

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CN 1679078 10/2005  
EP 0814423 12/1997

(Continued)

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OTHER PUBLICATIONS

International Preliminary Report on Patentability Dated Jan. 13, 2009 From the International Bureau of WIPO Re.: Application No. PCT/IL2007/000870.

(Continued)

**Related U.S. Application Data**

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(Continued)

*Primary Examiner* — Joseph Haley

(74) *Attorney, Agent, or Firm* — Miia Kati Janette Sula;  
Sergey Lamansky; Micky Minhas

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(57) **ABSTRACT**

A method and system for tracking a hover event on a digitizer sensor that treats hover and touch events differently comprises configuring at least one parameter of the digitizer sensor for hover tracking; wherein the at least one parameter is configured differently than for touch tracking, and detecting a pattern of input signals from a plurality of conductive lines on the digitizer sensor defining a tracking point responsive to the pattern of hover input signals detected.

(52) **U.S. Cl.**

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**21 Claims, 16 Drawing Sheets**

